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## Water Quality Improvement Project Salmon Creek Area: Multi-parameter

### Introduction

Salmon Creek, located entirely within Clark County, flows from the foothills of the Cascade Mountains west to Lake River, which in turn flows into the Columbia River. The Cascade foothills are generally forested, while the lower drainage is primarily urban. The city of Vancouver lies just south of lower Salmon Creek, and several small towns lie along the tributaries and central plains of the basin. These middle reaches contain a mixture of small towns, large and small-scale farms, pasture, and homes. Six major tributaries flow into Salmon Creek: Rock Creek and Morgan Creek to the east, Weaver Creek (also called Woodin) and Curtin Creek (also called Glenwood) in the middle, and Mill Creek and Cougar Creek to the west. Forestry, agriculture, commercial, and industrial activities are significant uses within the Salmon Creek basin. Urban areas also comprise a considerable proportion of the basin's land area, mostly along its southwest reaches. The basin is highly urbanized near Vancouver, with many small subbasins already heavily developed. These subbasins often experience problems with stormwater runoff, inadequate buffer vegetation, erosion, and sedimentation.. (See [Study Area map](#))

### Water quality issues

Rapid and diverse development within the basin has led to water quality degradation of Salmon Creek and its tributaries. Elevated levels of fecal coliform were measured in the basin as early as the 1980s. A study, completed in 1995 by the Department of Ecology, found significant violations of water quality standards in Salmon Creek for fecal coliform, turbidity, temperature and dissolved oxygen. Subsequent monitoring by Clark Public Utilities and Clark County Clean Water Program shows that violations of water quality standards continued.

### Why this matters

*Fecal coliform bacteria* from human and animal waste can make people sick. Bacteria can get into our waters from untreated or partially treated discharges from wastewater treatment plants, from improperly functioning septic systems, and from livestock, pets and wildlife.

People can help keep bacteria out of the water. Bag and trash dog poop. Check your on-site sewage system to make sure it is maintained and working properly. Fence livestock out of streams and use manure management practices that protect water quality.

*Turbidity* is a measure of suspended fine sediments in a body of water. High turbidity in rivers and streams comes from both streambank erosion and sediments washed into drainages during storm events. Pollutants such as fecal coliform bacteria can hitch a ride with suspended sediments. Turbidity can also make a river or stream less transparent, resulting in greater solar absorption and higher stream temperatures.

Stream turbidity can be improved by controlling stormwater runoff and by adding or maintaining vegetation on stream banks.

*Water temperature* influences what types of organisms can live in a water body.



### PROJECT INFO

#### Location:

WRIA: [#28 \(Salmon-Washougal\)](#)  
County: [Clark](#)

#### Water-body Name:

Salmon Creek

#### Parameters:

Fecal Coliform  
Temperature

#### # of TMDLs:

Fecal Coliform and Turbidity: 6  
Temperature: 6

#### Status:

Fecal Coliform and Turbidity:  
- Approved by EPA  
- Has implementation plan

#### Temperature:

- Approved by EPA  
- Has implementation plan

#### Contact Info:

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Cooler water can hold more dissolved oxygen that fish and other aquatic life need to breathe. Warmer water holds less dissolved oxygen. Threatened and endangered salmon need cold, clean water to survive.

One way to cool water temperature is to shade the water body by adding or retaining streamside vegetation.

## Status of the project

### Fecal coliform and turbidity

Using water quality data collected by local government agencies from 1988 through 1994, Ecology staff conducted modeling to determine the pollution reductions necessary to bring Salmon Creek into compliance with water quality standards for fecal coliform and turbidity. The modeling results were described in a 1995 Ecology report. In a 2001 report Ecology discussed, in general, the agencies and activities that would contribute to clean-up efforts. More information on responsible agencies and specific activities was provided in Ecology's 2005 Detailed Implementation Plan for fecal coliform and turbidity in the Salmon Creek watershed. Even before completion of the 2005 Detailed Implementation Plan, stakeholders began implementing clean-up activities in the Salmon Creek watershed including bank stabilization, riparian planting and identification of fecal coliform sources.

### Temperature

In November 2007, stakeholders held an adaptive management meeting to discuss accomplishments, ongoing activities, and additional needs in the watershed. One outcome of the meeting was an agreement to revisit the temperature and dissolved oxygen impairments that had not been addressed in the 2001 cleanup plan.

In May 2009, stakeholders got together for another Salmon Creek meeting. In addition to discussing stakeholder accomplishments since the November 2007 meeting, Ecology staff gave two presentations—one summarizing the results of a project analyzing water quality data collected in the watershed between 1988 and 2008, and the other describing an upcoming pilot project to develop an “innovative” temperature TMDL beginning in fall 2009. The data analysis project results are encouraging, as they show significant improvements in the watershed.

Work was started on the innovative temperature project. Ecology's shade model was used to determine effective-shade targets and temperature load allocations for Salmon Creek and tributaries. The modeling effort also had the benefit of an extensive data set compiled by Clark Public Utilities and Clark County Clean Water Program, eliminating the need to follow the current time-consuming and expensive process of collecting additional temperature data for a year then conducting site-specific modeling. The temperature modeling analysis was completed by August 2010, and discussions with local stakeholder groups started in March 2011. As a product of these discussions, an implementation plan was developed in mid-April 2011. A draft of the TMDL submittal and implementation plan was available for public review and comment June 6 - July 5, 2011. Comments received were addressed and the document was finalized.

On October 17, 2011 Ecology submitted the TMDL to the U.S. Environmental Protection Agency for approval. EPA approved the TMDL on December 14, 2011.

## Related information

Clark County Public Health web site  
[www.clark.wa.gov/health/environmental/index.html](http://www.clark.wa.gov/health/environmental/index.html)

Clark County Clean Water Program web site  
[www.co.clark.wa.us/water-resources/index.html](http://www.co.clark.wa.us/water-resources/index.html)

Clark Conservation District web site  
[www.clarkcd.org/](http://www.clarkcd.org/)

**Southwest Region**  
 Department of Ecology  
 P.O. Box 47775  
 Olympia, WA 98504-7775

**Vancouver Field Office**  
 WA Department of Ecology  
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**Environmental Assessment Program**  
 Department of Ecology  
 P.O. Box 47600  
 Olympia, WA 98504 -7600

Clark Public Utilities Stream Team web site

[www.clarkpublicutilities.com/Community/environmentalProjects/salmonCrWatershed](http://www.clarkpublicutilities.com/Community/environmentalProjects/salmonCrWatershed)

Cleaning up Salmon Creek: Stakeholder Commitment Makes a Difference (Ecology Water Quality Story)

<https://fortress.wa.gov/ecy/publications/SummaryPages/0910087.html>

## **Technical information**

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